

Listing of Claims:

Please cancel claims 1-5 and 12-20 without prejudice. Please amend claim 6 and add new claims 21-25.

1-5. (Cancelled)

6. (Currently Amended) A method of operating a carbon nanotube head with a disk having tracks, comprising:

locating the carbon nanotube head at a desired track at a rough precision by positioning an actuator to which the carbon nanotube head is attached in relation to the desired track;

determining an offset for a read head of the carbon nanotube head based on the desired track through use of a controller, the controller coupled to the carbon nanotube head, the controller determining an offset responsive to an angle of the actuator;

tracking the track through the read head using the offset;

feeding back an indication of a location of the desired track at a fine precision;

adjusting the offset responsive to the feeding back;

adjusting a target of the carbon nanotube head responsive to the feeding back, the adjusting accomplished through deflection of an e-beam of the carbon nanotube head;

writing data to the desired track from a write head of the carbon nanotube head;

reading data from the desired track after writing data to the desired track, the reading occurring prior to the disk rotating through a complete rotation, the data read from locations on the desired track where writing data has occurred immediately preceding the reading data, the

reading data occurring through use of the read head operating by deflecting the e-beam of the read head responsive to the offset;

wherein:

~~the carbon nanotube head includes a read head,~~ the read head of the carbon nanotube head including:

a base,

a substrate mounted on the base,

a carbon nanotube fixedly mounted on the substrate,

a housing mounted on the base, the housing enclosing the carbon nanotube,

a gating electrode mounted on the housing;

a focus electrode mounted on the housing;

a tracking electrode mounted on and within the housing,

an acceleration electrode mounted on and within the housing,

an opening in the housing opposite the carbon nanotube,

a boron-nitride window mounted on the housing and completely closing the opening of the housing,

a detection electrode mounted on an external surface of the housing, the detection electrode to detect electrons reflected from a recording medium;

and wherein:

the write head of the carbon nanotube head including:

a base,

a substrate mounted on the base,

a carbon nanotube on the substrate,

a housing mounted on the base, the housing enclosing the carbon nanotube,
a tracking electrode mounted on and within the housing,
an acceleration electrode mounted on and within the housing,
an opening in the housing opposite the carbon nanotube,
a boron-nitride window mounted on the housing and completely closing the
opening of the housing,
a detection electrode mounted on an external surface of the housing;

and wherein:

tracking occurs based on signals received from the detection electrode of the read head;

and

adjusting the target occurs through operation of the tracking electrode of the read head.

7-20. (Cancelled)

21. (New) A method of operating a carbon nanotube head with a disk having tracks,
comprising:

locating the carbon nanotube head at a desired track at a rough precision by positioning
an actuator to which the carbon nanotube head is attached in relation to the desired track;

determining an offset for a read head of the carbon nanotube head based on the desired
track through use of a controller, the controller coupled to the carbon nanotube head, the
controller determining an offset responsive to an angle of the actuator;

tracking the track through the read head using the offset;

feeding back an indication of a location of the desired track at a fine precision;

adjusting the offset responsive to the feeding back;
adjusting a target of the carbon nanotube head responsive to the feeding back, the
adjusting accomplished through deflection of an e-beam of the carbon nanotube head;
wherein:
the read head of the carbon nanotube head including:
a base,
a substrate mounted on the base,
a carbon nanotube fixedly mounted on the substrate,
a housing mounted on the base,
a tracking electrode mounted on the housing,
an acceleration electrode mounted on the housing,
a detection electrode mounted on the housing;
and wherein:
tracking occurs based on signals received from the detection electrode;
and
adjusting the target occurs through operation of the tracking electrode.

22. (New) A method of operating a carbon nanotube head with a disk having tracks,
comprising:
locating the carbon nanotube head at a desired track at a rough precision;
determining an offset for a read head of the carbon nanotube head based on the desired
track;
tracking the track through the read head using the offset;

feeding back an indication of a location of the desired track at a fine precision;
adjusting the offset responsive to the feeding back;
adjusting a target of the carbon nanotube head responsive to the feeding back, the
adjusting accomplished through deflection of an e-beam of the carbon nanotube head;
wherein:

the read head of the carbon nanotube head including:

- a base,
- a substrate mounted on the base,
- a carbon nanotube on the substrate,
- a housing mounted on the base,
- a tracking electrode mounted on the housing,
- an acceleration electrode mounted on the housing,
- a detection electrode mounted on the housing;

and wherein:

tracking occurs based on signals received from the detection electrode;

and

adjusting the target occurs through operation of the tracking electrode.

23. (New) The method of claim 22, wherein:

the locating the carbon nanotube head at a desired track at a rough precision occurs
through positioning an actuator to which the carbon nanotube head is attached.

24. (New) The method of claim 22, wherein:

the determining an offset for a read head based on the desired track occurs through operation of a controller, the controller coupled to the carbon nanotube head.

25. (New) The method of claim 24, wherein:

the controller determines the offset responsive to an angle of an actuator connected to the carbon nanotube head.